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EXPERIMENT STATIONS

SEASON 1953-54

ADEN PROTECTORATE

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ADEN PROTECTORATE
ABYAN COTTON EXPERIMENT STATION
PROGRESS REPORT FOR THE SEASON 1953-54

BY

R. R. ANSON.

Introduction.

Planting Dates.	*Picking Dates.*	*Close Season.*
Mid August to mid October.	January to May.	June to mid August.

Meteorology.

Floods were early and continued well into the season. Made up of many well spaced small spates, they were easily controlled and provided ideal conditions for watering evenly large areas of land, perhaps the largest total area since this scheme was started. Temperatures were normal and growing conditions favourable.

Crop Prospects.

Original cotton seed issues were sufficient for sowing 26,000 acres. This was not confined to the Abyan Board land alone but embraced the small independent areas of Yeramis, Lodar, Ahwar and Wadthia. The total effective area was finally estimated at 20,000 acres and the yield is expected to average 1 bale (400 lb.) per acre (1,200 lb. of seed cotton). By the end of April, seed cotton sufficient for producing 17,000 bales of lint had been purchased.

The lint is of good quality and will probably bulk in Grade 2. Owners of large farms have, however, experienced some difficulty in obtaining sufficient labour to pick their crops. This may mean a larger quantity of ground pickings than usual and might well lower the average grade.

All sowing seed, drawn from bollworm free areas of Grade 1 cotton, was well sunned on galvanised iron sheeting and thoroughly dusted with "Fernasan" A before distribution, and germination was satisfactory throughout all districts. In the coming season (1954-55) it is proposed to instal a concrete drying bay and to treat all sowing seed in a "Drum Mixer" using "Perecot" dust.

Cotton Breeding and Propagation.

Nucleus Bulking Area.

From 100 progeny rows of pure Abyan selections grown in the centre of a 9½ acre field of the same strain, 25 were selected. 19 of these will be bulked to form a new nucleus and grown in isolation at Yeramis; the remaining 6 will be grown again in progeny rows and surrounded by pure seed made from bulkings obtained from them.

The 9½ acres has yielded 19,090 lb. of seed cotton, an average of 2,009 lb. per acre, and sufficient seed to sow the whole of Yeramis district (1,500 acres) in season 1954-55; the pure seed obtained from the isolated bulking area (340 acres) grown at Yeramis this season (1953-54) is sufficient to sow 10,000 acres of the Abyan lands in 1954-55. By 1955-56 the whole scheme should be under pure seed and this will be renewed in each subsequent year by fresh waves of new specially selected material.

Other Varieties.

Substantial quantities of self-bred seed have been propagated from the following varieties:—

1. Domains Sakel (ex Sudan).
2. BLR 14/16 (Sakel B_2 selected for leafcurl resistance).
3. BLR 14/25 (Sakel type carrying B_2 and B_3, leafcurl resistant).
4. Karnak (New introduction from Egypt).
5. BAR XL-1 (1st filter of BAR 1730 L).
6. BAR XL-3 (3rd filter of BAR 1730 L).
7. BAR 12/3 (5th backcross BP52 carrying B_2).
8. Wilds Early Selected (American long staple).

This seed will be kept against the possibility of future demands and for future testing.

Small bulks of BAR XL-1 and Wilds Early were grown in isolation for seed purposes. These yielded 2,017 lb. (area ·96 acre) and 3,122 lb. seed cotton (area 2 acres) respectively. Wilds has a light picking still to come.

A plot of late sown (11th October 1953) Wilds Early (area 184′ × 32′) yielded 3,259 lb. seed cotton per acre.

Genetics.

F_1s obtained from a cross Wilds Early × 1730A produced long pointed bolls with a longer and finer lint than that of either parent (2″ full).

Next season they will be grown on wilt infected land and the wilt resistant ones, if any, will be backcrossed to 1730A with the object of obtaining a wilt resistant strain of 1730.

Under Abyan conditions Wilds Early has shown some resistance to wilt.

Cotton Varietal Tests.

The land occupied by the cotton varietal tests had previously grown sorghum for three consecutive years and in consequence it was not very rich in nitrogen and rather patchy. After flooding to an average depth of 1 metre, it was worked up to a fine tilth by the use of a tractor drawn tine cultivator and planted on an excellent seed bed (9th September 1953). Germination was excellent throughout (100%). Plants were thinned to 3 per hill and spaced 1 metre apart each way for all Egyptian strains, and 1 metre by 50 cms. apart for American varieties.

There were 10 replications and the general layout was similar to that of last season.

Except for higher patches which produced vigorous plants, growth was slow and somewhat restricted, but the crop flowered and fruited prolifically. No wilt (*Rhizoctonia*) was found throughout the tests and this probably explains why Sakel and Karnak varieties have yielded so well; they are, under Abyan conditions, considerably more susceptible to wilt than the 1730 group and wilt is usually more prevalent in richer and heavier soils.

Relevant data from these tests are given in Table 1.

Table 1.

Abyan Cotton Varietal Trials, *1953-54*.

	% G.O.T.	*Seed Cotton Yields*		*Corresponding Lint Yields*	
		lb. per acre	*% of control*	*lb. per acre*	*% of control*
BAR 12/3	32·6	2639	144	862	129
BAR XL-3	36·2	2342	128	848	127
Wilds Early	35·1	2414	132	847	127
Karnak	35·5	2256	123	801	120
BAR XL-1	35·9	2151	117	773	115
AB-1	35·2	2036	111	716	107
Dom. Sakel	33·3	2088	114	695	104
Abyan Control	36·5	1824	100	666	100
BLR 14/25	31·5	1759	91	554	80
S.E.		±210·5		±77·85	

Closer spacing, combined with the fact that they produced two crops in the season, one from primary and one from secondary growth, put up the yield of the American varieties BAR 12/3 and Wilds Early very considerably.

Pests.

In general the crop was remarkably free from pests. There were sporadic outbreaks of American bollworm (*Heliothis armigera*) and leaf eating caterpillars (several species). These outbreaks were mainly

confined to the Southern districts of Zingibar and Bagidar. Other pests, including Egyptian bollworm (*Earias spp.*), red bollworm (*Diparopsis perditor*), whitefly (*Bemisia gossypiperda*), capsid bug (*Creontiades spp.*) and flea beetle (*Podagrica spp.*), were present in the crop but in such small numbers that they were difficult to find.

Pink bollworm (*Platyedra gossypiella*), which gave so much trouble in 1951-52 season, was fortunately non-existent. This is rather remarkable when one realises that only 40 miles away, if one were to measure from the edge of the one cultivation to the edge of the other, the cotton crops at Lahej are very heavily infested with the pest.

Diseases.

Wilt (*Rhizoctonia* and *Fusarium vasinfectum*) was present throughout the Scheme but was, perhaps, less serious than in former seasons. Land which had grown cotton continuously seemed to suffer from it most.

Sorghum Varietal Trials.

The land chosen for these varietal tests had previously grown cotton. It was rich in nitrogen, moderately uniform and, after flooding and subsequent cultivation, provided an excellent seed bed.

The seed, sown by hand on 12th September 1953, germinated satisfactorily; there were no blank holes.

Plants were spaced 50 cms. apart and finally thinned to four per hill in rows 1 metre apart.

With a view to comparing the relative merits of native and European methods of sorghum cultivation, strips of similar length and breadth to the area occupied by the varietal tests were sown by native method alongside it. Ten random samples of similar size to the sub-plots of the main varietal tests were taken for comparison.

The natives, using the local plough or "Mohar", plant their sorghum by feeding the seed by hand into a wooden funnel used for directing it down a crude wooden pipe and depositing it behind the ploughshare in the newly opened furrow. The ultimate effect of this is somewhat similar to that of the wheat drill and the resultant crop germinates in a series of continuous lines about 1′ 6″ apart. The sorghum planted by this method is therefore generally overcrowded, spindly and sometimes dwarfed from nitrogen starvation.

This is amply reflected in the yields of both grain and gassab (stalks) shown in Table 2.

TABLE 2.

EUROPEAN METHOD.

Variety	Yield Heads lb./acre	Sig. Diff. 5%	Sig. Diff. 1%	Yield Grain lb./acre	Sig. Diff. 5%	Sig. Diff. 1%	Yield Gassab lb./acre
Aklamoi Early	3,070			2,132			21,216
Aklamoi Late	2,292			1,584			29,668
Dwarf Hagari	4,029	755·25	1,010·18	3,013	761·45	1,022·1	19,387
Beni	4,283			3,097			19,202
Zaar	3,800			2,841			25,373

NATIVE METHOD.

Dwarf Hagari	2,168			1,483			11,970
Beni	1,691	705·37	1,189·12	1,119	437·56	590·20	11,887
Zaar	774			524			12,280

CONCLUSION.

Cotton pests were negligible and high yields of good quality cotton were obtained.

Notwithstanding the fact that Karnak and Sakel types have given high yields in the varietal tests, they are not considered suitable for general cultivation because of their susceptibility to wilt and, in the case of Karnak, because of its lodging prostrate habit of growth under Abyan conditions.

BAR 12/3 (BP52) and Wilds Early were given closer spacing than the Egyptian strains. Both produced two crops within the season (one from primary and one from secondary growth). Either might be suited to areas where crops are dependent on rain and the season is short.

Large grained close headed sorghums such as Aklamoi strains have failed because, under Abyan conditions, the tight grained head harbours sorghum pests and because the gassab is too coarse and fibrous to be palatable and livestock do not take readily to it.

Dwarf Hagari has again produced high yields. Owing to its earliness it may prove useful as a 'Saif' (Summer) crop.

Pigeon pea and lubia should form useful rotation crops.

Chillies, onions, lucerne and cattle beet have been successful under irrigation and should be tried out commercially when the new tube well schemes get under way.

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